ATLANTIC DIVISION,
NAVAL FACILITIES ENGINEERING COMMAND

ACCIDENT ABSTRACT

Accident Type: Masonry Wall Collapse (> $500,00.00 loss)
Injury: Lower leg / hip / chest (Lost-time)
Type of work: Masonry
Equipment: N/A

Description of the Accident:

A contractor has erected a masonry wall approximately twenty-six feet in height with no bracing. The wall fell over shortly after being topped out causing a second floor to collapse and trapping a worker who sustained injury involving a broken leg and hip. Contractor experienced in excess of $500,000.00 loss, contract delay, injured an employee, and will receive an unsatisfactory evaluation for the contract.

Direct Cause:

The primary cause of the collapse was the absence of temporary bracing. Due to the nature of the design the wall was essentially unstable until the roof framing was installed. Walls were approximately 26 feet tall. Winds of approximately 20 knots occurred caused the unbraced walls to fall. The bracing plan requirement was highlighted in the specification section of the contract however no bracing plan was submitted. The contractor quality control system in place allowed the work phase to begin without ensuring all the required submittals were approved.

Contributing Causes:

During the site visits by the ROICC and designer of record the following discrepancies were noted which are considered contributing factors to the collapse: Lack of grout in reinforced cells, improper laps on reinforcing, bond beam reinforcing not continuous at corners, stacked bonds in lieu of running bond joints, missing wire reinforcing at control joints, and virtually no penetration of reinforcing in the bottom course cells.

Lessons Learned: (ref. USACE EM 385-1-1 2003)

1) **Contractor is required to develop a bracing plan and brace all masonry walls over 8 feet in height (27.G.02).**
2) **The contractor must also erect a limited access zone (This is not in lieu of bracing) (27.G.01).**
3) **As part of their responsibility Contractor quality control managers are required to ensure that all submittals required by the contract specification are submitted and approved before work on that phase may begin (Spec. section 01450).**
4) **The masonry construction work phase Activity Hazard Analyses (AHA) must include consideration for the bracing required to prevent wall overturn or collapse and be reviewed with all employees before work begins. This was stated in the AHA but not followed (01.A.13).**
5) **Government Quality assurance should include verification of contractor QC inspections and reporting. At a minimum spot checks should include a review of the contract submittal log before a new work phase begins to assure all the required submittals have been reviewed.**
6) **The mishap highlights the interdependency of the relationship between safety and quality control on our projects.**

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